

Determination

The U.S. Department of Energy, U.S. Environmental Protection Agency Region 10, and Idaho Department of Health and Welfare have completed review of the referenced information for Operable Unit 2-14, as it pertains to the INEL Federal Facility Agreement and Consent Order of 12/91. Based on this review, the Parties have determined that continued monitoring should be initiated.

(additional info on remaining source term required)
Brief summary of the basis for the action:

EPA

TRA-57 is an abandoned buried diesel fuel oil line from TRA-727 and TRA-775 to ETR. Detection of diesel in PW 13 which is nearby supports further monitoring at this time.

DEQ

Further action required to determine size of source term remaining. This site should proceed to scoping where the best approach for collecting this information can be determined.

References: Track 1 pgs 2/13/01

DOE Project Manager

Kathleen E. Hain

5/25/01

Date

EPA Project Manager

Walter A. ...

3/26/01

Date

Idaho Project Manager

David J. ...

4/20/01

Date

**DECISION DOCUMENTATION PACKAGE
COVER SHEET**

RECEIVED

MAR 22 2001

Environmental Cleanup Office

prepared in accordance with

**TRACK 1 SITES:
GUIDANCE FOR ASSESSING
LOW PROBABILITY HAZARD SITES
AT THE INEEL**

Site description: Abandoned Buried Diesel Fuel Oil Line from TRA-727 and TRA-775 to ETR

Site ID: TRA-57

Operable Unit: 2-14

Waste Area Group: 2

I. SUMMARY - Physical description of the site:

Test Reactor Area (TRA)-57 is an abandoned buried diesel fuel oil line, consisting of approximately 580 meters (1,900 ft) of 5.08-cm (2-in.) carbon steel piping. This line was installed during Engineering Test Reactor (ETR) construction, between 1955 and 1958, and was abandoned in the early 1980s. The line was used to transfer diesel fuel oil from Diesel Fuel Oil Tanks (TRA-727C, TRA-727D, and TRA-775) to three facilities: TRA-643, TRA-648, and TRA-656. Small quantities of the diesel fuel oil were used in an experimental process to lubricate compressors at TRA-643. Small quantities of the diesel fuel oil were also used to fuel space heaters at TRA-656. The bulk of the diesel fuel oil was used to operate a diesel generator in TRA-648. Two day tanks were used to provide fuel to the three facilities because the length of the pipeline caused the diesel fuel oil flow rate to be slow. These tanks were filled automatically, as needed, via pumps at TRA-727 and the diesel fuel line. The pipeline is separated and blind flanged at TRA-727, and is believed to be capped at each of the three branches (TRA-643, TRA-648, and TRA-656). There is currently no evidence of corrosion in the areas that are visible. In addition, on December 3, 1990, a "Tracer Tight" test was performed on the current configuration of the diesel fuel oil line and its integrity was confirmed. The results of the test indicated no leaks in the line.

The line contains a fuel blend of two types of diesel fuel oil. Grade No. 1 Diesel is a special purpose, light distillate fuel to be used in applications requiring higher volatility than that provided by Grade No. 2 Diesel fuels. Grade No. 2 Diesel is a general purpose, middle distillate fuel suitable for use in applications in which there are conditions of frequently varying speed and load.

According to Mr. Harry Williams,¹⁰ the former ETR shift supervisor, the TRA-648 diesel generator stopped operating in 1981 because it was not receiving any fuel. This prompted the excavation of the

diesel fuel oil line in 1981. The diesel fuel oil line was excavated, a leak was identified, and the pipeline was repaired by reconfiguring it to utilize an abandoned nearby section of an underground steam line. The excavated area can be identified at TRA-57 by newer paving over a long, narrow area to the east of TRA-648. A total of two leaks from the diesel fuel oil line were reported in the early 1980s, as indicated in the *Preliminary Scoping Track 2 Summary Report for the Test Reactor Area Operable Unit 2-04: Fuel Spills*⁵. One leak occurred in approximately 1980, and the other occurred in late 1981. The quantity of diesel fuel oil that leaked into the soil and the extent of soil impacted by the release is unknown (see Question 3).

There has been no evidence of leaks in the diesel fuel oil line since the early 1980s.

DECISION RECOMMENDATION

II. SUMMARY – Qualitative Assessment of Risk:

The level of reliability of the information collected is high. The overall risk associated with the pipeline is low because the pipeline is separated and blind flanged at TRA-727, and is believed to be capped at each of the three branches (TRA-643, TRA-648, and TRA-656). In addition, there is no evidence of corrosion in the remaining line. Although the line may have leaked at one time, a "Tracer Tight" test was performed on the newly configured diesel fuel oil line on December 3, 1990, and its integrity was confirmed. The results of the test indicated no leaks in the line. Soil impacted by the release of diesel fuel oil in 1980 and 1981 may still be present under the asphalt at TRA-57. While this may pose a risk at the site, if the soil were excavated and removed, the risk of exposure potential would be increased. The risk from the area of potential diesel contamination could be high and warrants further evaluation.

III. SUMMARY - Consequences of Error:

False Negative Error. The false negative decision error would be to conclude that there has not been a release from the diesel fuel oil line into the soil at TRA-57 when in fact there has. Concluding that the contents of the line have not been released when in fact they have would result in inappropriately recommending a no further action alternative for the site. The consequences of this would be fewer controls in place to ensure protection of the public and the environment for the chosen remedial alternative when in fact these controls should be in place. In addition, if no further action is taken and an undetected release has occurred at the site, there may be the potential for migration via the groundwater pathway resulting in higher risk than anticipated.

False Positive Error. The false positive error would be to conclude that there has been a release from the diesel fuel oil line into the soil at TRA-57 when in fact there has not. If action were taken at a clean site, this would result in the unnecessary expenditure of resources.

IV. SUMMARY - Other Decision Drivers:

While there may be a risk from leaving the pipeline in the ground, if the pipeline and contents were excavated and removed, the risk of exposure potential would be increased. Consequently, the risk would be greater by excavating and removing the pipeline due to the surrounding facilities, utilities, and other buried lines in the vicinity compared to leaving the pipeline in the ground until the entire area can be deactivated.

Currently, the reconfigured diesel fuel oil line is intact, and there is no evidence of corrosion of the current diesel fuel oil line. On December 3, 1990, a "Tracer Tight" test was performed on the newly configured diesel fuel oil line and its integrity was confirmed. The results of the test indicated no leaks in the line. Although the diesel fuel oil line may have leaked in the early 1980s, the leak was repaired, and the leak test conducted in 1990 confirmed the integrity of the diesel fuel oil line.

V. Recommended Action:

The recommended action for TRA-57 is "No Further Action" with institutional controls. TRA-57 will remain under industrial institutional controls, which will consist of Restricted Access, Control of Activities (excavation) and Visible Access Restriction (Warning Signs). If additional information regarding the nature and extent of contamination becomes available (for instance during deactivation of the area), this recommended action will be reconsidered. When the area is deactivated, safety measures will be in place to handle the removal of the materials and surround obstacles. It is estimated that the time required for the pipeline to corrode to a point where the line would be breached is in excess of 100 years.

The risk from the area of potential diesel contamination between TRA-57 and the PW-13 well from the 1980 spill warrants further evaluation.

Signatures	# PAGES:	DATE: 02-26-01
Prepared By: <i>Val Seeluf</i>	DOE WAG Manager: <i>John Nelson</i>	22 FEB 01
Approved By: <i>Julie Sherwood</i>	Independent Review: <i>Lanier</i>	

**DECISION STATEMENT
(by DOE RPM)**

Date recd: *March 8, 2001*

Disposition:

The abandoned buried diesel fuel oil line from TRA - 727 and TRA - 775 to the Engineering Test Reactor (ETR) is separated (blind flanged or capped) from operating facilities and based on tests in 1990 intact. The risk poised by excavation before the facility is deactivated is higher than the risk poised by leaving the diesel fuel oil line undisturbed. The site should be rated, "No Further Action" with institutional controls. The line should be re-evaluated when the facility is deactivated.

DATE: *March 16, 2001*

PAGES (decision statement): *1*

NAME: *Kathleen E. Hain*

SIGNATURE: *Kathleen E. Hain*

DECISION STATEMENT
(by EPA RPM)

Date recd: 3/22/01

Disposition:

TRA 57 is an abandoned buried diesel fuel oil line historically reported to have leaked. These historic leaks were investigated as part of the OU 2-04 Trade 2 investigation and subsequently addressed in the OU 2-13 Comprehensive ROD. TRA 57 is therefore limited to the pipe and pipe bed and the question of whether the residual oil (if any) represents an existing or future release threat. Also, no explanation is provided for the detection of diesel in PW-13. Given that leak site TRA 57 is the likely source of the observed diesel further evaluation of the potential for TRA 57 to be a source is required. Recommend continued monitoring.

DATE: 3/26/01	# PAGES (decision statement):
NAME: Wayne Pierce	SIGNATURE: 

DECISION STATEMENT
(by STATE RPM)

Date recd: 4/20/01 TRA-57

Disposition:

The diesel fuel line is reported to have leaked in 1980 and 1981; quantity unknown. Although follow-up efforts included capping of the line, there is no information presented in this document that provides an estimate of the remaining source term. The source term should be determined and this work should be resubmitted, or this site should proceed to a back two investigation.

DATE: 4/20/01

PAGES (decision statement):

NAME: Dean J. Nygard

SIGNATURE:

Dean J. Nygard

PROCESS/WASTE WORKSHEET

SITE ID TRA-57

Col 1 Processes Associated with this Site	Col 2 Waste Description & Handling Procedures	Col 3 Description & Location of any Artifacts/Structures/Disposal Areas Associated with this Waste or Process
Historical processes associated with this site were the routing of diesel fuel oil from TRA-727 and TRA-775 to TRA-643, TRA-648, and TRA-656. One abandoned buried diesel fuel oil line is still located beneath the ground surface. Immediately to the east of TRA-648, there are actually two abandoned lines; the first is the original diesel line, while the second is a section of a former steam line that was used to bypass the original leaking diesel line.	The pipeline currently contains fuel blend of #1 and #2 diesel. Diesel fuel oil from diesel fuel oil tanks (TRA-727C, TRA-727D, and TRA-775) was transferred through the diesel fuel line (approximately 580 meters [1,900 ft]) to TRA-643, TRA-648, and TRA-656. Day tanks were used to provide fuel to the three facilities; these tanks were filled automatically, as needed, via pumps at TRA-727 and the diesel fuel line.	Artifact: Pipeline Location: Extends from TRA-727 and TRA-775 to TRA-643, TRA-648, and TRA-656. Description: The pipeline is a 5.08-cm (2-in.) carbon steel diesel fuel oil line, and is currently approximately 580 meters (1,900 ft) in length. East of TRA-648, a section of a former steam line currently bypasses the original diesel line; this cross-connection is visible at one end inside TRA-648, and it is believed that the other cross-connection is underground approximately 100 meters (328 ft) east of TRA-648. The former steam line appears to be 3.8-cm (1.5-in) carbon steel.

CONTAMINANT WORKSHEET

SITE ID Diesel Fuel Oil Line (TRA-57)

PROCESS (Col 1) The routing of diesel fuel oil from TRA-727 and TRA-775 to TRA-643, TRA-648, and TRA-656

WASTE (Col 2) Fuel Blend of #1 and #2 diesel fuel oil

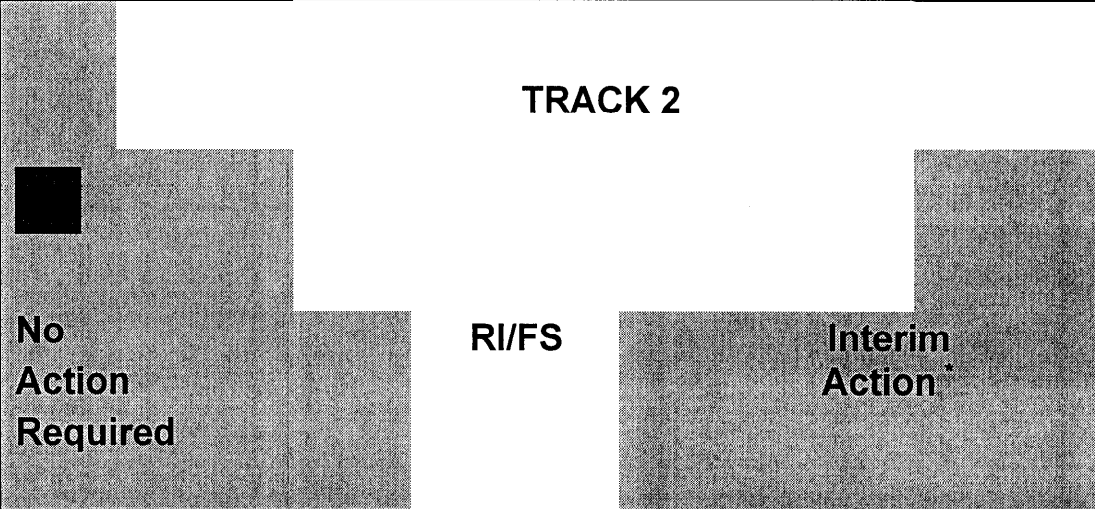
Col 4 What Known/Potential Hazardous Substances/ Constituents are Associated with this Waste or Process?	Col 5 Potential Sources Associated with this Hazardous Material	Col 6 Known/Estimated Concentration of Hazardous Substances/Constituents	Col 7 Risk-based Concentration (mg/kg)		Col 8 Qualitative Risk Assessment (hi/med/lo)	Col 9 Overall Reliability (hi/med/lo)
Diesel Fuel Oil	Contents remaining in pipe	~ 100%	-----		-----	-----
Naphthalene (<0.1%)	Contents remaining in pipe	2.237 x 10 ³ mg/kg	56† – Residential Soil 190† – Industrial Soil	5.5**	Low %	High
Benzene*	Contents remaining in pipe	2.10 mg/kg	0.67† – Residential Soil 1.5† – Industrial Soil	0.06**	Low %	Low
Toluene*	Contents remaining in pipe	31.7 mg/kg	520† – Residential Soil 520† – Industrial Soil	5.4**	Low %	Low
Ethylbenzene*	Contents remaining in pipe	10.9 mg/kg	230† – Residential Soil 230† – Industrial Soil	10**	Low %	Low
Xylenes*	Contents remaining in pipe	108.6 mg/kg	210† – Residential Soil 210† – Industrial Soil	7**	Low %	Low

* The proportion of benzene, toluene, ethylbenzene, and xylene in the diesel fuel oil was obtained from Environmental Technology Centre – Properties of Crude Oils and Oil Products: Diesel Fuel Oil (see Reference 9)

† = PRG (EPA Region 9)

** = Idaho Risk Based Corrective Action Guidance Document, Tier 0 soil cleanup levels (see Reference 13)

% = Although estimated concentrations exceed risk-based concentrations in the fuel oil, there is no exposure pathway for human or ecological exposure, so risk is assessed as “low”.

QUALITATIVE RISK AND RELIABILITY EVALUATION TABLE			
	QUALITATIVE RISK		
	Low	Medium	High
highly unreliable			
highly reliable			
reliability	LOW Concentration resulting in risk $< 10^{-6}$	MEDIUM	HIGH concentration resulting in risk $> 10^{-4}$
	qualitative risk		



Risk associated with the Diesel Fuel Oil Line

NOTE: Industrial institutional controls will be required until the site is deactivated and the risk evaluated.

NOTE: Risk from the contaminated area between TRA-57 and PW-13 has not been evaluated and warrants further investigation.

PROCESS Abandoned Pipeline

Question 1. What are the waste generation process locations and dates of operation associated with this site?

Block 1 Answer:

There are currently no waste generation processes associated with this site. The diesel fuel oil line was installed between 1955 and 1958, and was abandoned in the early 1980s. This line was used to transfer diesel fuel oil.

Block 2 How reliable are the information sources? X High Med Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the diesel fuel line with regard to waste generation processes is considered highly reliable. The New Site Identification Form (NSID)⁸ identifies that this line was used for diesel fuel oil and specifies the time frame that the diesel fuel oil line was in operation. In addition, Mr. George Swaney⁶ stated that the line was blind flanged at the source, in TRA-727. A visual inspection of the line was conducted on September 21, 2000; the line was blind flanged.

Block 3 Has this INFORMATION been confirmed? X Yes No (check one)

If so, describe the confirmation.

The information regarding the use and dates of operation of the diesel fuel line is well documented, and is considered highly reliable.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> <u> </u>	Analytical data	<input type="checkbox"/> <u> </u>
Anecdotal	<input type="checkbox"/> <u> </u>	Documentation about data	<input type="checkbox"/> <u> </u>
Historical process data	<input type="checkbox"/> <u> </u>	Disposal data	<input type="checkbox"/> <u> </u>
Current process data	<input type="checkbox"/> <u> </u>	QA data	<input type="checkbox"/> <u> </u>
Areal photographs	<input type="checkbox"/> <u> </u>	Safety analysis report	<input type="checkbox"/> <u> </u>
Engineering/site drawings	<input checked="" type="checkbox"/> <u>3,7</u>	D&D report	<input type="checkbox"/> <u> </u>
Unusual Occurrence Report	<input type="checkbox"/> <u> </u>	Initial assessment	<input checked="" type="checkbox"/> <u>8</u>
Summary documents	<input type="checkbox"/> <u> </u>	Well data	<input type="checkbox"/> <u> </u>
Facility SOPs	<input type="checkbox"/> <u> </u>	Construction data	<input type="checkbox"/> <u> </u>
OTHER	<input checked="" type="checkbox"/> <u>6</u>		

PROCESS Abandoned Pipeline

Question 2. What are the disposal process locations and dates of operation associated with this site?

Block 1 Answer:

There are no disposal processes associated with this site. The diesel fuel oil line was installed between 1955 and 1958, and was abandoned in the early 1980s. The pipeline was never used for disposal.

Block 2 How reliable are the information sources? X High Med Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the diesel fuel line is considered highly reliable. The NSID⁸ identifies the time frame that the diesel fuel line was in operation and describes the function of the diesel fuel oil line. In addition, Mr. George Swaney⁶ stated that the line was used for diesel fuel oil, but is currently blind flanged at the source, in TRA-727. A visual inspection of the line was conducted on September 21, 2000; the line was blind flanged.

Block 3 Has this INFORMATION been confirmed? X Yes No (check one)

If so, describe the confirmation.

The information regarding the function of the diesel fuel line is well documented, and is considered highly reliable.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> <u> </u>	Analytical data	<input type="checkbox"/> <u> </u>
Anecdotal	<input type="checkbox"/> <u> </u>	Documentation about data	<input type="checkbox"/> <u> </u>
Historical process data	<input type="checkbox"/> <u> </u>	Disposal data	<input type="checkbox"/> <u> </u>
Current process data	<input type="checkbox"/> <u> </u>	QA data	<input type="checkbox"/> <u> </u>
Areal photographs	<input type="checkbox"/> <u> </u>	Safety analysis report	<input type="checkbox"/> <u> </u>
Engineering/site drawings	<input checked="" type="checkbox"/> <u> 3,7 </u>	D&D report	<input type="checkbox"/> <u> </u>
Unusual Occurrence Report	<input type="checkbox"/> <u> </u>	Initial assessment	<input checked="" type="checkbox"/> <u> 8 </u>
Summary documents	<input type="checkbox"/> <u> </u>	Well data	<input type="checkbox"/> <u> </u>
Facility SOPs	<input type="checkbox"/> <u> </u>	Construction data	<input type="checkbox"/> <u> </u>
OTHER	<input checked="" type="checkbox"/> <u> 6 </u>		

PROCESS Abandoned Pipeline

Question 3. Is there empirical, circumstantial, or other evidence of migration? If so, what is it?

Block 1 Answer:

Yes, there is evidence of migration.

The diesel fuel oil line originates at the TRA Fuel Oil Pump House (TRA-727), which is located near the northern perimeter of TRA. The line extends approximately 1,900 feet to the south and branches to three facilities: TRA-643, TRA-648, and TRA-656. Small quantities of the diesel fuel oil were used in an experimental process to lubricate compressors at TRA-643. Small quantities of the diesel fuel oil were also used to fuel space heaters at TRA-656. The bulk of the diesel fuel oil was used to operate a diesel generator in TRA-648. Two day tanks were used to provide fuel to the three facilities because the length of the pipeline caused the diesel fuel oil flow rate to be slow. These tanks were filled automatically, as needed, via pumps at TRA-727 and the diesel fuel line.

According to Mr. Harry Williams,¹⁰ the former ETR shift supervisor, the TRA-648 diesel generator stopped operating in 1981 because it was not receiving any fuel. This prompted the excavation of the diesel fuel oil line in 1981. The diesel fuel oil line was excavated, a leak was identified, and the pipeline was repaired by reconfiguring it to utilize an abandoned nearby section of an underground steam line. There has been no evidence of leaks in the diesel fuel oil line since the early 1980s. On December 3, 1990, a "Tracer Tight" test was performed on the reconfigured diesel fuel oil line and its integrity was confirmed. The results of the test indicated no leaks in the line. The excavated area can be identified at TRA-57 by newer paving over a long, narrow area to the east of TRA-648.

A total of two leaks from the diesel fuel oil line were reported in the early 1980s, as indicated in the *Preliminary Scoping Track 2 Summary Report for the Test Reactor Area Operable Unit 2-04: Fuel Spills*⁵. One leak occurred in approximately 1980, and the other occurred in late 1981. Further conversation with Mr. Williams revealed that the tracer test performed in 1990 was conducted on this reconfigured line and not on the original, which had leaked. This information was not known or included in the original Track 2 investigation. Mr. Williams stated that ETR operated for specific periods of a few months, with about a year between each operation period, and the pumps in TRA-727 ran automatically. In addition, the diesel fuel oil line serviced three different facilities for three different operations. During the Track 2 investigation, no information regarding the consumption rates for the diesel fuel oil could be located. Therefore, it is possible that leakage from the pipeline into the ground could have been occurring unnoticed for a long period of time during those time periods in which ETR was not operating.

During the drilling of monitoring wells for the investigation of the TRA Perched Water System, a petroleum odor was noted in one of the wells (Monitoring Well Perched Water [PW]-13). PW-13, at its nearest point, is located 60 feet south of the TRA-57 diesel fuel oil line. There are no other petroleum transfer lines or tanks located within 1,800 feet of Monitoring Well PW-13.

Samples of the product were taken from PW-13, and results of the analysis for the petroleum sample, dated October 5, 1990, identified it as either Number 1 or Number 2 diesel oil. On September 19, 1990,

the petroleum product layer was observed to be approximately 8.5-ft thick, extending from the 66.5-ft level to the 75-ft level, and floating atop the perched water zone. The diesel fuel was bailed from the corehole; after 24 hours, approximately 1 ft of additional free product had seeped into the corehole. By November 1990, approximately 20 gallons of diesel had been removed from PW-13. PW-13 was completed to a total depth of 90 feet below the ground surface on November 8, 1990.

Between November 1990 and March 1994, occasional monitoring was performed with no further detection of diesel. The Preliminary Scoping Track 2 Summary Report⁷ was completed for PW-13 on March 25, 1994. The recommendation in the report was that the status of the PW-13 monitoring well, as it relates to the diesel contamination, should be changed to no further action. In addition, it stated that since there is no continuing contamination and no source is in evidence, the site does not present an unacceptable risk. At the time of the investigation, the source of diesel was unknown. Complicating the issue was the information gained from the tracer test; the source of diesel was not suspected to be the TRA-57 pipeline because the test proved the line's integrity. What was not known was that the line had been reconfigured and had in fact leaked.

Since construction of PW-13, occasional monitoring has continued. From February through September 2000, diesel fuel oil was again detected in PW-13. The largest amount of product was approximately 16 inches, detected in February, and the smallest amount was a trace of product, detected in August. The water level fluctuates seasonally, and it appears that there is a correlation between water level and product thickness.

The source of the diesel fuel in PW-13 is unknown. In Occurrence Report EGG-TRA-1990-0002,¹ it was postulated that corrosion caused a breach of the ETR diesel fuel line while it was in service, allowing diesel fuel to migrate through the alluvial strata and along fractures in the basalt layer. Eventually the diesel fuel accumulated at the top of the deep perched water zone in a localized pocket at a depth of 75 ft. This scenario seems to be likely when compared to the information obtained from Mr. Williams.¹⁰

New information provided by Mr. Williams that was not known at the time of the Track 2 investigation or signature of the Record of Decision indicates that while the initial investigation concluded that a large release was not suspected due to the integrity of the pipeline based on the "tracer test," in fact, the pipeline had leaked prior to the reconfiguration of the diesel line through the steam line. This new information also suggests that a sizeable amount of diesel (in excess of hundreds of gallons) could have been released to the environment in the 1980 spill. The risk from this spill requires further evaluation.

Block 2 How reliable are the information sources? X High Med Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the diesel fuel contamination is highly reliable. The presence of diesel fuel in PW-13 is documented in Occurrence Report EGG-TRA-1990-0002,¹ and the subsequent investigation is documented in *Preliminary Scoping Track 2 Summary Report for the Test Reactor Area Operable Unit 2-04: Fuel Spills*.⁵ New information from Mr. Williams is based upon first hand knowledge.

Block 3 Has this INFORMATION been confirmed? X Yes ___ No (check one)

If so, describe the confirmation.

The information regarding the presence of contamination in PW-13 is well documented, and is considered highly reliable.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Areal photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input type="checkbox"/> _____	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input checked="" type="checkbox"/> <u>1</u>	Initial assessment	<input checked="" type="checkbox"/> <u>8</u>
Summary documents	<input checked="" type="checkbox"/> <u>5</u>	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>10</u>		

PROCESS Abandoned Pipeline

Question 4. Is there evidence that a source exists at this site? If so, list the sources and describe the evidence.

Block 1 Answer:

Yes, there is evidence that a source exists at this site. The former diesel fuel oil line is still located beneath the ground surface at this site, but has not been used since the early 1980s. The line was used to transfer diesel fuel oil from Diesel Fuel Oil Tanks (TRA-727C, TRA-727D, and TRA-775) to TRA-643, TRA-648, and TRA-656. The pipeline is separated and blind flanged at TRA-727, and is believed to be capped at each of the three branches (TRA-643, TRA-648, and TRA-656).

This remaining line, approximately 580 meters (1,900 ft) of 5.08-cm (2-in.) carbon steel pipe between TRA-727 and ETR (TRA-643, TRA-648, and TRA-656), can be considered a potential source of contamination. It may contain diesel fuel oil, but the total quantity that may be contained within the line is unknown. However, the pipe is intact, and there is no evidence of corrosion of the diesel fuel oil line in areas visible to inspection. In addition, on December 3, 1990, a "Tracer Tight" test was performed on the newly configured diesel fuel oil line and its integrity was confirmed. The results of the test indicated no leaks in the line.

The recent detection of diesel fuel oil in February through September 2000 at PW-13 is evidence that a large area of contamination may exist that requires further investigation.

Block 2 How reliable are the information sources? X High Med Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the diesel fuel line is considered highly reliable. The NSID⁸ identifies the time frame that the diesel fuel line was in operation and summarizes the actions taken regarding the line.

The *Preliminary Scoping Track 2 Summary Report for the Test Reactor Area Operable Unit 2-04: Fuel Spills*⁵ verifies that a leak test was performed on the newly configured line in 1990.

Mr. George Swaney⁶ stated that the line was blind flanged at the source, in TRA-727. A visual inspection of the line was conducted on September 21, 2000; the line was blind flanged.

Block 3 Has this INFORMATION been confirmed? X Yes No (check one)

If so, describe the confirmation.

The information regarding the source at TRA-57 (the diesel fuel line) is well documented, and is considered highly reliable.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Areal photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input checked="" type="checkbox"/> <u>3,7</u>	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input type="checkbox"/> _____	Initial assessment	<input checked="" type="checkbox"/> <u>8</u>
Summary documents	<input checked="" type="checkbox"/> <u>5</u>	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>6</u>		

PROCESS Abandoned Pipeline

Question 5. Does site operating or disposal historical information allow estimation of the pattern of potential contamination? If the pattern is expected to be a scattering of hot spots, what is the expected minimum size of a significant hot spot?

Block 1 Answer:

Currently, the diesel fuel oil line is not suspected to be leaking. However, an estimate of the potential contamination for the diesel fuel oil release that occurred in 1980 is approximately 2,550 ft³ or 19,100 gallons.

The minimum size of the plume was estimated as follows:

The TRA-57 diesel fuel oil line released an unknown quantity of diesel fuel oil in 1980. Diesel fuel oil was detected in PW-13, located approximately 60 feet from the diesel fuel oil line at its closest point. Although it has not been confirmed, the suspected source of contamination for PW-13 was the diesel fuel oil line.

From the Operable Unit 2-13 Groundwater Monitoring Plan,¹¹ Figure 2-7, the gradient on the Deep Perched Water System is not steep in this area, so it can be assumed that in 60 horizontal feet, there is no significant change in groundwater elevation or product thickness.

Assuming that the plume extends radially from the nearest point of the pipe, and that it extends only as far as PW-13, the plume area can be estimated by: $\pi \times 60 \text{ feet}^2$, which is equal to 11,300 ft². Using the worst case scenario of recent (since 2000) product thickness observed in PW-13 (16 inches or 1.33 feet), and assuming the porosity of the basalt is 0.17 (Todd, Groundwater Hydrology,¹² Table 2.1), then the minimum plume volume is $11,300 \times 1.33 \times 0.17 = 2,550 \text{ ft}^3$. This equates to 19,100 gallons.

The plume may extend further than PW-13. If an area of contamination exists from a previous incident, this area may require further investigation.

Block 2 How reliable are the information sources? ☒ High ☐ Med ☐ Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the diesel fuel contamination is highly reliable. The presence of diesel fuel in PW-13 is documented in Occurrence Report EGG-TRA-1990-0002,¹ and the subsequent investigation is documented in *Preliminary Scoping Track 2 Summary Report for the Test Reactor Area Operable Unit 2-04: Fuel Spills*.⁵ New information from Mr. Williams is based upon first hand knowledge.

Block 3 Has this INFORMATION been confirmed? ☒ Yes ☐ No (check one)

If so, describe the confirmation.

The information regarding the presence of contamination in PW-13 is well documented, and is considered highly reliable.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Areal photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input checked="" type="checkbox"/> <u>1</u>	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input checked="" type="checkbox"/> <u>5</u>	Initial assessment	<input checked="" type="checkbox"/> <u>8</u>
Summary documents	<input type="checkbox"/> _____	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>10</u>		

PROCESS Abandoned Pipeline

Question 6. Estimate the length, width, and depth of the contaminated region. What is the known or estimated volume of the source? If this is an estimated volume, explain carefully how the estimate was derived.

Block 1 Answer:

The estimated contaminated region from the 1980 release is given in Question 5. Currently, the diesel oil line is not suspected to be leaking. However, an estimate of the potential leak of the existing contents in the pipeline is provided.

The estimated volume of the pipeline is 1,176 L (310.5 gallons). The line is approximately 580 meters (1,900 ft) of 5.08-cm (2-in.) carbon steel pipe between TRA-727 and TRA-643, TRA-648, and TRA-656. The maximum amount of hazardous substance/constituent was estimated by

$V = \pi r^2 L$, where:

π (π) = 3.14,

r = the radius of the pipe, and

L = the length of the pipe.

Therefore, the maximum volume of the pipe is 1.176 m³ (41.45 ft³). Converting this to liters and gallons (where 1 L = 1.0 x 10⁻³ m³ and 1 gallon = 3.786 L), then the volume of the pipe is estimated to be 1,176 L (310.5 gallons). This number is very conservative. It is unknown whether corroded portions of the pipe wall exist, resulting in a thinner pipe wall, and a larger volume within the pipeline. Therefore, the thickness of the pipe walls was not taken into consideration and subtracted from the pipe diameter prior to the calculation.

Block 2 How reliable are the information sources? ☒ High ☐ Med ☐ Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the diesel fuel contamination is highly reliable. The presence of diesel fuel in PW-13 is documented in Occurrence Report EGG-TRA-1990-0002,¹ and the subsequent investigation is documented in *Preliminary Scoping Track 2 Summary Report for the Test Reactor Area Operable Unit 2-04: Fuel Spills*.⁵ New information from Mr. Williams is based upon first hand knowledge.

Block 3 Has this INFORMATION been confirmed? ☒ Yes ☐ No (check one)

If so, describe the confirmation.

The information regarding the presence of contamination in PW-13 is well documented, and is considered highly reliable.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Areal photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input checked="" type="checkbox"/> <u>7</u>	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input checked="" type="checkbox"/> <u>1</u>	Initial assessment	<input checked="" type="checkbox"/> <u>8</u>
Summary documents	<input checked="" type="checkbox"/> <u>5</u>	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>10</u>		

PROCESS Abandoned Pipeline

Question 7. What is the known or estimated quantity of hazardous substance/constituent at this source? If the quantity is an estimate, explain carefully how the estimate was derived.

Block 1 Answer:

The estimated maximum quantity of hazardous substance/constituent at this source would be the total amount of diesel fuel oil that could be contained within the diesel fuel oil line. This amount is 1,176 L (310.5 gallons).

The line currently contains a fuel blend of #1 and #2 diesel fuel oil. The line is approximately 580 meters (1,900 ft) of 5.08-cm (2-in.) carbon steel pipe between TRA-727 and TRA-643, TRA-648, and TRA-656.

The maximum amount of hazardous substance/constituent that could be contained within the diesel fuel oil line was estimated by

$V = \pi r^2 L$, where:

π = 3.14,

r = the radius of the pipe, and

L = the length of the pipe.

Therefore, the maximum volume of diesel fuel oil that could be contained within the pipe is 1.176 m³ (41.45 ft³). Converting this to liters and gallons (where 1 L = 1.0 x 10⁻³ m³ and 1 gallon = 3.786 L), then the maximum volume of diesel fuel oil that could be contained within the pipe is estimated to be 1,176 L (310.5 gallons).

Block 2 How reliable are the information sources? High ☒ Med ☐ Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the diesel fuel line is considered highly reliable. The NSID⁸ identifies the time frame that the diesel fuel line was in operation, and summarizes the actions taken regarding the line. However, there is no documentation available that gives the quantity of diesel fuel oil that is currently contained within the pipeline.

Block 3 Has this INFORMATION been confirmed? X Yes ☐ No (check one)

If so, describe the confirmation.

The information regarding the diesel fuel oil pipeline is well documented, and is confirmed by a number of sources.

Block 4 **Sources of Information** (check appropriate box[es] & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Areal photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input checked="" type="checkbox"/> <u>3,7</u>	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input type="checkbox"/> _____	Initial assessment	<input checked="" type="checkbox"/> <u>8</u>
Summary documents	<input type="checkbox"/> _____	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>4,6</u>		

PROCESS Abandoned Pipeline

Question 8. Is there evidence that this hazardous substance/constituent is present at the source as it exists today? If so, describe the evidence.

Block 1 Answer:

Yes, there is evidence that the hazardous substance/constituent is present at the source as it exists today.
The former diesel fuel oil line is still located beneath the ground surface at this site and contains an undetermined quantity of diesel fuel oil. The estimated maximum quantity of diesel at the source is estimated to be 1,176L (310.5 gal). See question 7.

The recent detection of diesel fuel oil in February through September 2000 at PW-13 is evidence that suggests a large area of contamination may exist that requires further investigation.

Block 2 How reliable are the information sources? X High Med Low (check one)

Explain the reasoning behind this evaluation.

The information regarding the diesel fuel line is considered highly reliable. The NSID⁸ identifies the time frame that the diesel fuel line was in operation and summarizes the actions taken regarding the line. The *Preliminary Scoping Track 2 Summary Report for the Test Reactor Area Operable Unit 2-04: Fuel Spills*⁵ verifies that a leak test was performed on the line in 1990. Mr. George Swaney⁶ stated that the line was blind flanged at the source, in TRA-727. A visual inspection of the line was conducted on September 21, 2000; the line was blind flanged.

Block 3 Has this INFORMATION been confirmed? X Yes No (check one)

If so, describe the confirmation.

The information regarding the diesel fuel line is well documented, and is considered highly reliable.

Block 4 **Sources of Information** (check appropriate box(es) & source number from reference list)

No available information	<input type="checkbox"/> _____	Analytical data	<input type="checkbox"/> _____
Anecdotal	<input type="checkbox"/> _____	Documentation about data	<input type="checkbox"/> _____
Historical process data	<input type="checkbox"/> _____	Disposal data	<input type="checkbox"/> _____
Current process data	<input type="checkbox"/> _____	QA data	<input type="checkbox"/> _____
Areal photographs	<input type="checkbox"/> _____	Safety analysis report	<input type="checkbox"/> _____
Engineering/site drawings	<input checked="" type="checkbox"/> <u>3,7</u>	D&D report	<input type="checkbox"/> _____
Unusual Occurrence Report	<input checked="" type="checkbox"/> _____	Initial assessment	<input checked="" type="checkbox"/> <u>8</u>
Summary documents	<input checked="" type="checkbox"/> <u>5</u>	Well data	<input type="checkbox"/> _____
Facility SOPs	<input type="checkbox"/> _____	Construction data	<input type="checkbox"/> _____
OTHER	<input checked="" type="checkbox"/> <u>6</u>		

References for Decision Documentation Package

1. A.H. Clark, Occurrence Report: Discovery of a Petroleum Product While Drilling a Monitoring Well (PW-13), EGG-TRA-1990-0002, September 27, 1993.
2. American Society for Testing and Materials, "Standard Specification for Diesel Fuel Oils," Designation : D 975 – 98B, December 10, 1998.
3. B. Brawn, "MTR: Fuel Oil Pump House and Tank Farm Flow Diagram," Drawing No. MTR-D-4679, March 1959 (origination date).
4. Idaho National Engineering Laboratory, *Track 1 Sites: Guidance for Assessing Low Probability Hazard Sites at the INEL*, DOE/ID-10340, Revision 1, July 1992.
5. Idaho National Engineering Laboratory, *Preliminary Scoping Track 2 Summary Report for the Test Reactor Area Operable Unit 2-04: Fuel Spills* EGG-ER-11110, Revision 2, January 1994.
6. Personal Communication with Mr. George Swaney, TRA Environmental Engineer, September 21, 2000.
7. R.A. Friesz, "TRA Underground Piping Project: Miscellaneous Fuel, Acids, and Air Lines," Drawing No. 448549, September 1993 (origination date).
8. R.S. Cain, New Site Identification Form for Abandoned Buried Diesel Fuel Oil Line (TRA-57), March 1999.
9. Environmental Technology Centre, "Properties of Crude Oils and Oil Products: Diesel Fuel Oil," www.ETCentre.org/cgi-win/oil_prop.cgi.exe, September 28, 2000.
10. Personal communication with Mr. Harry Williams, Former ETR Shift Supervisor, October 6, 2000.
11. *Groundwater Monitoring Plan for the Test Reactor Area Operable Unit 2-13*, DOE/ID-10626, Revision 1, July 2000.
12. Todd, "Groundwater Hydrology," John Wiley and Sons, 1980.
13. Idaho Division of Environmental Quality, "Idaho Risk-Based Corrective Action (RBCA) Cleanup Requirements for Petroleum Releases."

Memo of Conversation

Date: 11/30/2000
To: Julie Sherwood
Cc: Neil Snyder
From: Kathy Jensen
RE: TRA Information for Track 1 Reports

The following is information obtained during a conversation with Mr. George Swaney, TRA Environmental Engineer, on September 21, 2000, during a physical inspection all five of the new sites, TRA-56 through -60:

Mr. Swaney provided the TRA Underground Piping Project: Miscellaneous Fuel, Acids, and Air Lines Drawing, Drawing No. 448549, dated September 1993 (origination date). This diagram shows the miscellaneous fuel and acid pipelines associated with TRA.

Mr. Swaney stated that there have been no documented releases with the TRA-56, TRA-58 and TRA-59 pipelines.

Mr. Swaney stated that the TRA-56 pipeline was used for sulfuric acid and was capped at both ends (TRA-631 and the former TRA-645). He provided information from the 1997 TRA-645 D&D Project (INEEL/EXT-97-01026). He stated that he was involved in this project. He also indicated that he saw both solid and liquid sulfuric acid in the TRA-56 pipeline. He provided pictures documenting this information.

Mr. Swaney stated that the TRA-57 pipeline was used for diesel fuel oil and is blind flanged in TRA-627, at the original source. This information was verified upon inspection.

Mr. George Swaney stated that the TRA-58 pipeline contains #5 fuel oil. He stated that two of the lines were fuel supply lines, originating in TRA-727, and routing to TRA-609, and the other two lines were the return lines for the same fuel, routing directly to the outside diesel storage tanks TRA-727A and TRA-727B. He also stated that the valves are closed and the pump control motor centers are de-energized. This information was verified upon inspection.

Mr. Swaney stated that the tanks associated with the TRA-58 pipeline were previously steam cleaned, but the steam cleaning process was unsuccessful in removing all of the material from the tanks, especially the material that had solidified in the bottom of the tanks. He stated that a visual inspection was conducted in 1998 on the #5 fuel oil tanks, and showed that approximately three feet of solidified petroleum waste material remains in the tanks.

Mr. Swaney provided the MTR: Fuel Oil Pump House and Tank Farm Flow Diagram, Drawing No. MTR-D-4679, dated March 1959 (origination date). This drawing shows the configuration of the pipelines and tanks in TRA-627. Mr. Swaney stated that due to the viscosity of the fuel oil and the fact that it had to be heated so that it could be transferred to TRA-609, migration of the fuel oil is highly unlikely.

Mr. Swaney stated that the TRA-59 pipeline was used to transfer sulfuric acid from TRA-631 to TRA-671. He stated that the line was flanged shut at TRA-631, and was capped at TRA-671.

Mr. Swaney stated that TRA-60 is contained within a fenced area North of TRA-608. The Fenced Area North of TRA-608 contains two acid tanks (TRA-731D and TRA-731E), two caustic tanks (TRA-731A and TRA-731B), a pumphouse (TRA-631), a regenerant effluent neutralization tank (TRA-708C), and a brine pit (TRA-731 A), all housed within a bermed area. The tanks are interconnected with a 45-ft long concrete trench that runs east and west. He stated that lead contamination was found in soil sample collected at TRA-60, but none of the processes within TRA-60 contain lead. He also stated that the extent of the lead contamination is not known.

Memo of Conversation

Date: 11/30/2000
To: Julie Sherwood
From: Neil Snyder
RE: TRA-57 Information for Track 1 Reports

The following information was obtained during a conversation with Harry Williams, a former ETR Shift Supervisor, on October 6, 2000. The conversation was initiated with a question about the possibility that diesel oil contamination recently found in groundwater well PW-13 might have originated from the diesel oil line that is now designated as TRA-57. The following excerpts from the conversation represent the information that was previously unknown to WAG 2 personnel:

The TRA-648 diesel generator stopped operating in 1981 because it was not receiving any fuel. This generator was fed from a day tank that was found to be dry. The tank was needed because the flow rate through the long pipeline from TRA-727 was low. The day tank had a level sensor that was connected to the pumps at TRA-727; this provided automatic filling of the day tank as required. It was assumed that there must be a leak in the diesel fuel oil pipeline, so the line was excavated backwards from the day tank until the leak was found. The pipeline was repaired by reconfiguring it to utilize an adjacent abandoned underground steam line; the cross-connection to this steam line can be observed in TRA-648. The excavated area can be identified at TRA-57 by newer paving over a long, narrow area to the east of TRA-648. The tracer test performed in 1990 was conducted on this reconfigured line, not on the original.